

MARKED-UP COPY OF AMENDED CLAIMS:

1. (Amended) A control device for mixing and positioning [voice] sound comprising:

an input audio channel controller further comprising: an input [electric balance] level controller, a plurality of input to output [connection] controllers; and a main [controlling loop] controller circuit selector;

a plurality of [preset changing main] master controllers further having: a [change control button] cross fader and a scenes [change] selector.

2. (Amended) The control device for mixing and positioning [voice] sound as claimed in Claim 1, wherein the input [electric balance] level controller is utilized to control parameters of signals from a plurality of input channels.

3. (Amended) The control device for mixing and positioning [voice] sound as claimed in Claim 1, wherein the plurality of input to output [connection] controllers [is] are utilized to set each one of the plurality of input channels to at least one of a plurality of output channels.

4. (Amended) The control device for mixing and positioning [voice] sound as claimed in Claim 1, wherein one of the plurality of input to output [connection] controllers is selected by the [main controlling loop] controller circuit selector to be controlled by one of the plurality of [preset changing main] master controllers.

5. (Amended) The control device for mixing and positioning [voice] sound as claimed in Claim 1, wherein one of the plurality of input to output [connection] controllers is set to operate independently without being controlled by the plurality of [preset changing main] master controllers.

6. (Amended) The control device for mixing and positioning [voice] sound as claimed in Claim 1, wherein the output audio channel controller controls combination of the plurality of output channels based on combinations of the plurality of input channels to the plurality of output channels set by the plurality of input to output [connection] controller; and [a] the number of output [loop] channels of any groups is the same as a number of the combinations set by the plurality of input to output [connection] controllers.

7. (Amended) The control device for mixing and positioning [voice] sound as claimed in Claim 6, wherein the output audio channel controller directly outputs signals based on the combinations set by the plurality of input to output [connection] controllers, or mixes the signals again and then outputs the mixed signals.

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8. (Amended) The control device for mixing and positioning [voice] sound as claimed in Claim 1, wherein the [change control button] cross fader serves [servers] for switching the combinations set by the plurality of input to output [connection] controllers[, and after one of the combinations being set, the change control button serves to handle a loop of the one of the plurality of input channels to the plurality of output channels by the set combination].

9. (Amended) The control device for mixing and positioning [voice] sound as claimed in Claim 1, wherein the [change] scenes selector serves to [change] set combinations of the [main controlling loop] controller circuit selector.

10. (Amended) A control method for mixing and positioning [voice] sound, all input audio channel being assembled into multiple output channels to match required [voice] sound emitting points, comprising:

arranging outputs of [voice] sound based on a viewpoint of visual effect; wherein a positioning of each [voice] sound is set at a reasonable position based on a viewpoint of a camera, as the viewpoint of a camera is changed, the viewpoint of [voice] sound is also changed; positioning of [voice] sound must be designed to match capturing points of cameras; and matching a [voice] sound control to movements of objects, wherein unused [main controlling loops] master controllers are selected to [be an] control the audio channels of independent movements [and each preset sets of the audio channels is set with input start point, passing through point, far away points].

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REMARKS

This paper is a Preliminary Amendment for the above-referenced Patent Application filed as Serial #09/940,703 with a filing date of 29 August 2001.

Applicant, after reviewing the Patent Application as filed, has requested the undersigned Attorney to make minor amendments to the Application Specification, Abstract, and Claims. These amendments were necessitated due to grammatical, translational, and idiomatic errors. No new subject matter has been inserted in the Specification, Abstract or Claims. Additionally, Claims 11 and 12 have now been canceled from this case.

It is respectfully requested that the amended Specification, Abstract, and Claims be entered into this case prior to examination.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Morton L. Rosenberg". The signature is fluid and cursive, with the first name "Morton" being more prominent.

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MARKED-UP COPY OF SPECIFICATION:

CONTROL DEVICE (& METHOD) FOR MIXING AND POSITIONING
[VOICE] SOUND

FIELD OF THE INVENTION

The present invention relates to a control device & method for mixing and positioning [voice] sound in for example the audio mixing of movie and TV in 5.1 format. Moreover, the multi-audio channel outputs can be performed. Furthermore, the multi-audio channel outputs can be performed for stage performance and other special formats.

BACKGROUND OF THE INVENTION

In general, for dramas of TV or movies, the [voice] signal are recorded [behind the scenes] and edited in post production stage for presenting a stereo effect or a sound effect. But for the live show or stage show, in general, the [voice] signal [recorded behind the scenes can not be well matched to] must be processed in real time to match the image. The [recorded voices can not be present as that] positioning of sound becomes complicate in the live show [even] where many microphones are used. The primary factor for this problem is due to mixing of audio. In general, the mixing of audio

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is performed manually, and thus at one time, only two microphones are controlled in this method since one hand only controls one panning knob to achieve [a button. Moreover, the control is performed] gradual sound moving [movingly].

For a live show, the voice is manually controlled to match the viewpoint of lens of the camera according to the indication of the director. If the lens points to a music instrument, then the voice of said instrument is amplified. However, if the lens moves rapidly, it is often that the [voice] sound can not well match the viewpoint of the lens.

Although current mixing positioning and control ways and the devices of the same are equipped with multi-switches or potential meters, it is confined to a single [audio] output channel, double [audio] output channels, or multi-double [audio] output channels. For example, for five audio channels, only right or left audio channel, or middle audio channel, or left surrounding sound effect or right surrounding effect is controlled. It is impossible that the five audio channels outputs [voice] signal at the same time. A balance control is used to control the mixing [of] to the left and right sides. Moreover, a joystick is used in the mixing controller, but there is still logical confusion to control and decide which output channels to go. [but] And for synchronous multiple audio channel control, the mixing becomes very [complex] complicate and difficult. It is possible to define a certain mixing way single input to multiple outputs, while it is impossible to define a synchronous variation of [multi] multiple-inputs [input and] to [multi] multiple-

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outputs. Currently, computers based operation are used [to] for the mixing control, but the control way is indirect. In general, it is suitable [in the control of behind the scenes] for postproduction since at a time, only one action is operated through a computer mouse. Therefore, it is not suitable to be used in a live show.

SUMMARY OF THE INVENTION

Accordingly, the primary object of the present invention is to provide a control device and method for mixing and positioning [voice] sound, wherein the audio mixing of movie and TV 5.1 format. Moreover, the multi-audio channel outputs can be performed. Furthermore, the multi-audio channel outputs can be performed for stage performance and other special formats.

Another object of the present invention is to provide a control device and method for mixing and positioning [voice] sound, wherein the positioning of the stereo is matched to the viewpoint of a camera so that the video and audio effect are synchronous.

Another object of the present invention is to provide a control device and method for mixing and positioning [voice] sound, wherein to control the output result from the various audio inputs [signals are mixed and then outputs] that are processed as various audio positioning mixing.

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Another object of the present invention is to provide a control device and method for mixing and positioning [voice] sound, wherein [voice] sound control is designed to match the movement of an object, the [voice] signal of a variety of independent movements are inputted to the different audio channels.

Another object of the present invention is to provide a control device and method for mixing and positioning [voice] sound, wherein the main [controlling loop] controller selector has a plurality of audio mixing positioning controller for setting the control voice input based on the visual viewpoint or moving objects.

The various objects and advantages of the present invention will be more readily understood from the following detailed description when read in conjunction with the appended drawing.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 and 2 are structural schematic views for the control device for mixing and positioning [voice] sound in the present invention.

Fig. 3 is a structural schematic view showing the combination of the input audio and output audio of the preset changing main controller in the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In order that those skilled in the art can further understand the present invention, a description will be described in the following in details. However, these descriptions and the appended drawings are only used to cause those skilled in the art to understand the objects, features, and characteristics of the present invention, but not to be used to confine the scope and spirit of the present invention defined in the appended Claims.

Referring to Figs. 1 and 2, a schematic view about the method for audio mixing and positioning and a system structure of the device of the same according to the present invention is illustrated. The structure of the present invention includes an input audio channel controller 10, an output audio channel controller 20, and a [preset changing main] master controller 30. The input audio channel controller 10 has an input [electric balance] level controller 11 for controlling the amplitude of the audio input to be at the level of the general mixing controller; an input to output [connection] controller 12 for setting the combination from the input channel to the output channel; each input is correspondent to at least one output channel; a [main controlling loop] controller circuit selector 13 for selecting a certain input to output connection controller 12 to be controlled by a [preset changing main] master controller 30, and for setting a separation operation, i.e., setting a certain input to output [connection] controller 12 to operate independently without being controlled by [the main controlling loop selector 13] any

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master controller 30.

The output audio channel controller 20 controls the combination of the output channel based on the combination of the input channel to the output channel set by the input to output [connection] controller 12. In each set, the number of the output [loop] is correspondent to the number of the combination set by the input to output [connection] controller 12. Furthermore, the output audio channel controller 20 directly outputs of the signals from the output channel of each set[, or the signal is]. The outputs will be mixed [twice] a second time and [then is outputted] output afterward for the main purpose of this invention.

Referring to Fig. 3, a structural schematic view of the [controlled input and outputting] controlling combination of the [preset changing main] master controller is illustrated. The [preset changing main] master controller 30 of the present invention includes a [change control button] cross fader 31 and a [change scenes] selector 32. The [change control] scenes [button] buttons [servers] serves for [controlling the combination about] selecting the input to output connection controller 12 of the [a selected] input audio channel under controlled, and after setting, the [change control button] cross fader 31 serves to operate [a variety] the transition of the [combinations] settings of the input [channel] channels and output [channel loops] channels. [The change selector 32 serves for changing the combined ways of selection of the main controlling loop selector 13.]

The most popular format of a general output [loop] is 5.1 [audio channel] defined by the film industries. Besides, 7.1 audio channel, even more output ways, can be used, which are used in special cases, for example, stage performance in that all the input channels are assembled to match the required [voice] sound emitting points so as to be assembled as a multiple output configuration. In the present invention, the outputs of [voice] sound can be arranged based on the viewpoint of visual effect. In that, with the cameras, the positioning of each [voice] sound is disposed at a reasonable position, as the viewpoint of image changes, the viewpoint of [voice] sound is also changed. The positioning of [voice] sound must be designed to match the capturing points of cameras.

For example, in the [film studio] sound stage, the input points of the music instruments of a musical group, such as [five input points] violin, viola, cello, flute, oboe, are set to the same [main controlling loop] control circuit. The positioning of each [input voice] instruments [is] are set [for] according to the viewpoint [face to the studio] to the front of the ensemble as [a] the first preset [set]. The positioning of each [input voice] instruments [is] are set [for] according to the viewpoints [to] of the violin close-up from to right as [a] the second preset [set]. The positioning of each [input voice] instruments [is] are set [for] according to the viewpoint of the cello and flute close-up from the left as [a] the third and fourth preset sets. Therefore, when the [lens of the camera] director chooses the camera viewpoint [moves to some viewpoint], the preset

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[voices] sounds are positioned [and combined] so that the [voice] sound of the instruments from the viewpoints are completely matched to a frame. Therefore, the defect of the prior art that the [voice] sound emitting position is not matched to the positioning the image will not occur.

In the present invention, if only two preset sets are used, it is only necessary to change the first preset set and the second presets so as to match the corresponding image frames. In the present invention, in the case of four preset [sets] being used to match six viewpoints, one set can be selected as a changeable set, while the other three sets are used to match the most frequent three viewpoints. The changeable set is utilized to match the other three viewpoints. Therefore, the present invention can be set with different combination as required so as to control emitted [voices] sound to match the requirement of an image.

Besides, the [voice] sound control of the present invention can be designed to match the movement of an object, such as a plane flying over the head, a moving car, etc. In the present invention, the [voice] sound of various independent movements can be inputted to the audio channels. Then, unused main [controlling loops] controller, for example, second, third, fourth, etc., are selected. Then, each preset sets of these audio channels are set with input start point, passing through point, far away points, If a sound effect process is performed, it is transferred to another one or more audio channels

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so as to set various preset sets, which uses the same main [controlling loop] controller so as to achieve the object of synchronization. If high level sound effect processor, a hidden effect, for example Doppler effect, can be set, thereby, the frequency of a sound can be shifted to a higher or lower frequency based the speed of the object. Setting a passing point, then sound is shifted to the lower frequency. Thereby, a three dimensional sound effect is achieved.

Although the present invention has been described with reference to the preferred embodiments, it will be understood that the invention is not limited to the details described thereof. Various substitutions and modifications have been suggested in the foregoing description, and others will occur to those of ordinary skill in the art. Therefore, all such substitutions and modifications are intended to be embraced within the scope of the invention as defined in the appended Claims.